CHAPTER 2

DESCRIPTION OF THE NORTH FORK HOLSTON RIVER WATERSHED

2.1. BACKGROUND. Native Americans called the Holston River "Hogoheegee." Early explorers called it "Indian River" and French traders called it the "Cherokee River." Today, the Holston River is named in honor of Stephen Holston (also spelled Holstein). Holston, an early explorer and surveyor with The Expedition of 1748, was the first settler to explore the Holston River system, including North Fork of the Holston River.

This Chapter describes the location and characteristics of the Tennessee portion of the North Fork Holston River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The North Fork Holston River Watershed is located in Tennessee and Virginia. The Tennessee portion (2.5% of the watershed) includes parts of Hawkins and Sullivan Counties.

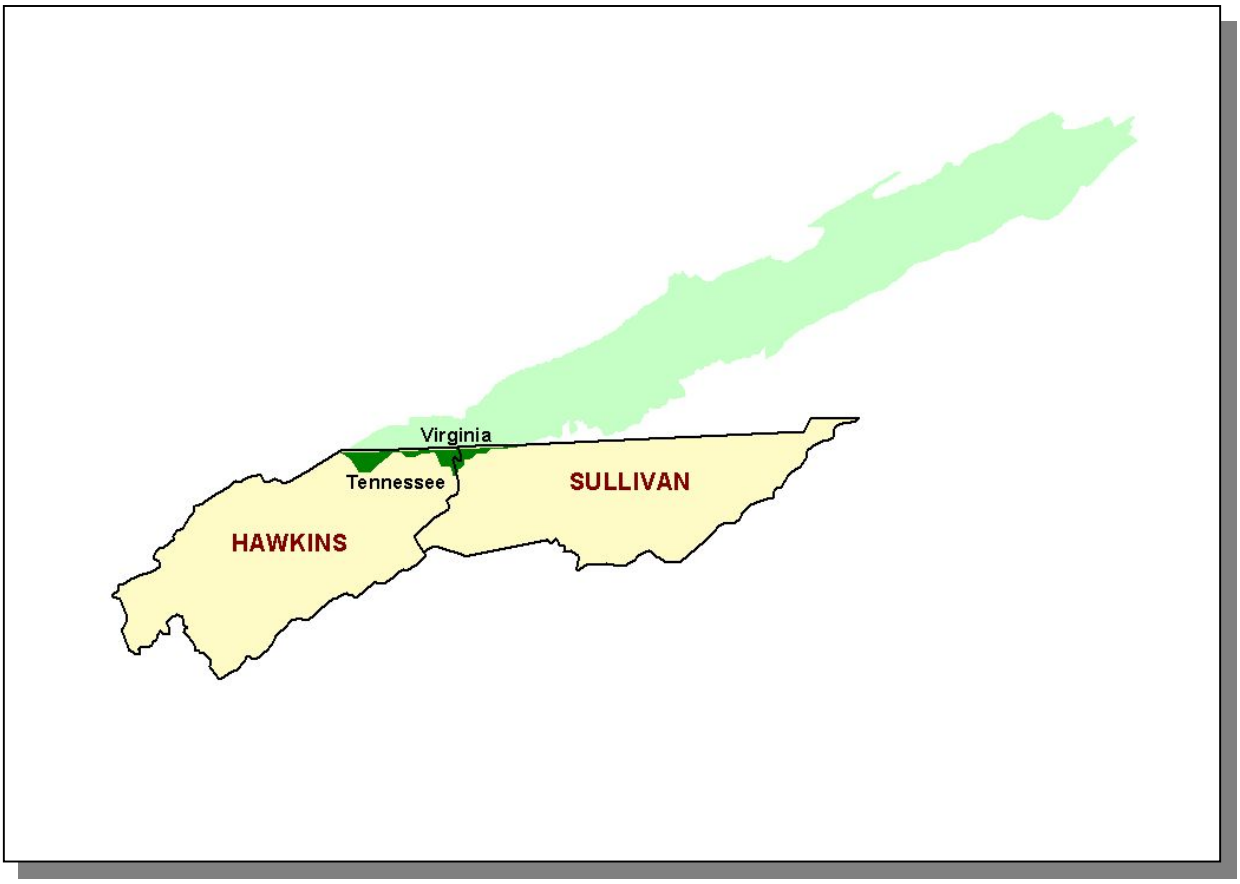

Figure 2-1. General Location of the Tennessee Portion of the North Fork Holston River Watershed. *Dark green, Tennessee portion (18 square miles); light green, Virginia portion (702 square miles).*

COUNTY	% OF WATERSHED IN EACH COUNTY
Hawkins	79.8
Sullivan	20.2

Table 2-1. The North Fork Holston River Watershed Includes Parts of Two East Tennessee Counties. *Percentages are calculated for Tennessee portion of watershed.*

2.2.B. Population Density Centers. Three state highways serve the major communities in the Tennessee portion of the North Fork Holston River Watershed and vicinity.

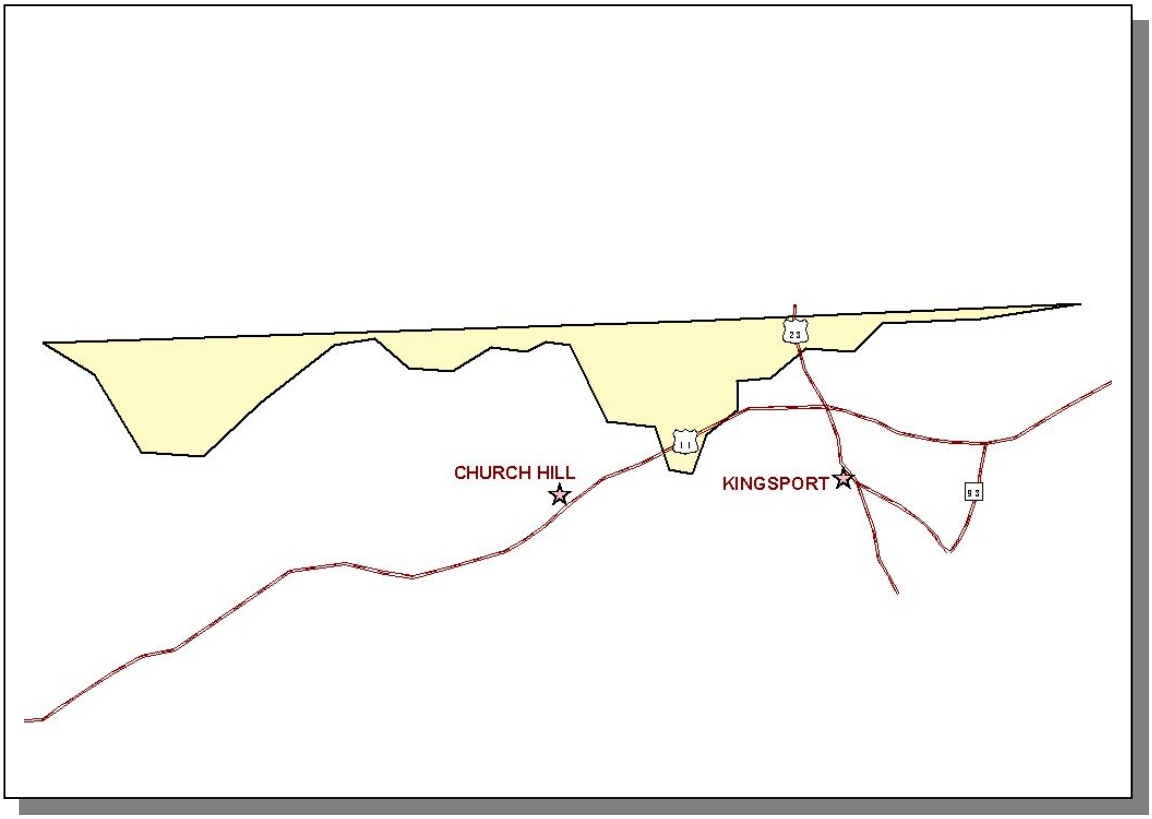

Figure 2-2. Municipalities and Roads in the Tennessee Portion of the North Fork Holston River Watershed and vicinity.

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The North Fork Holston River Watershed, designated 06010101 by the USGS, drains approximately 720 square miles, 18 square miles of which are in Tennessee, and empties to the Holston River Watershed (06010104).

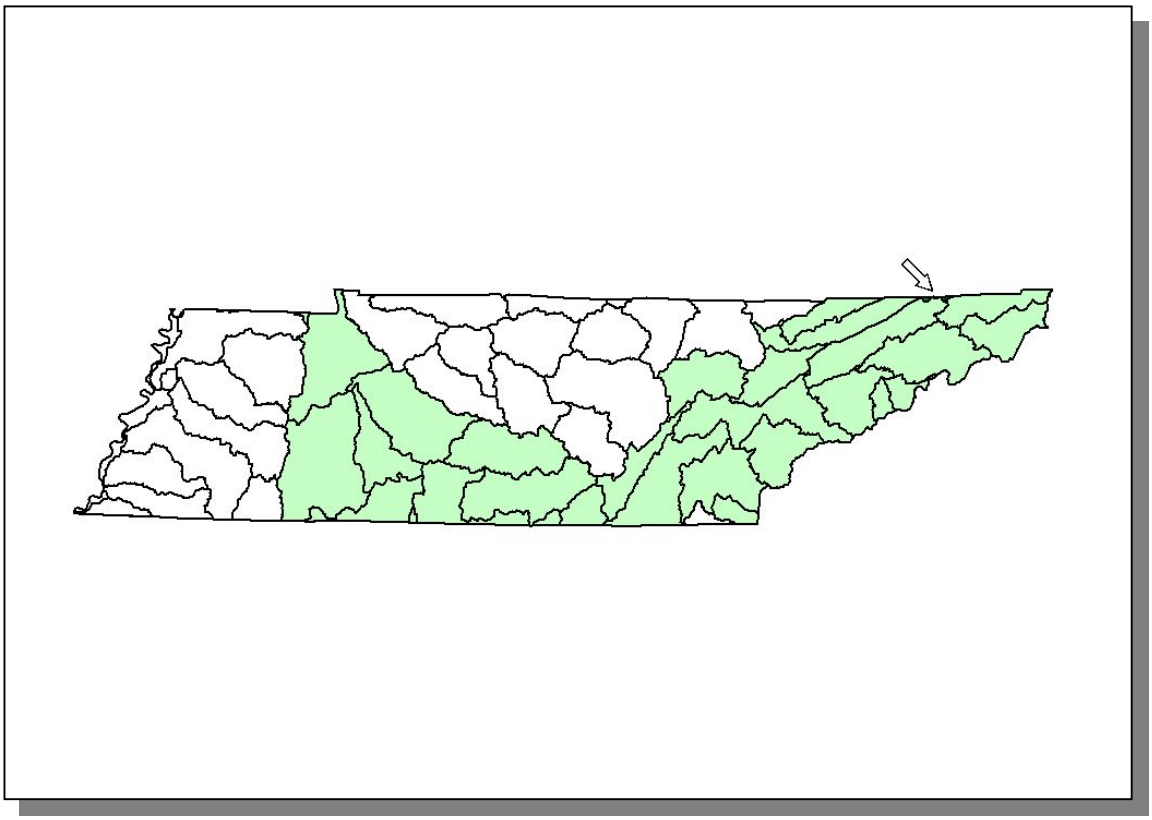

Figure 2-3. The North Fork Holston River Watershed is Part of the Tennessee River Basin.

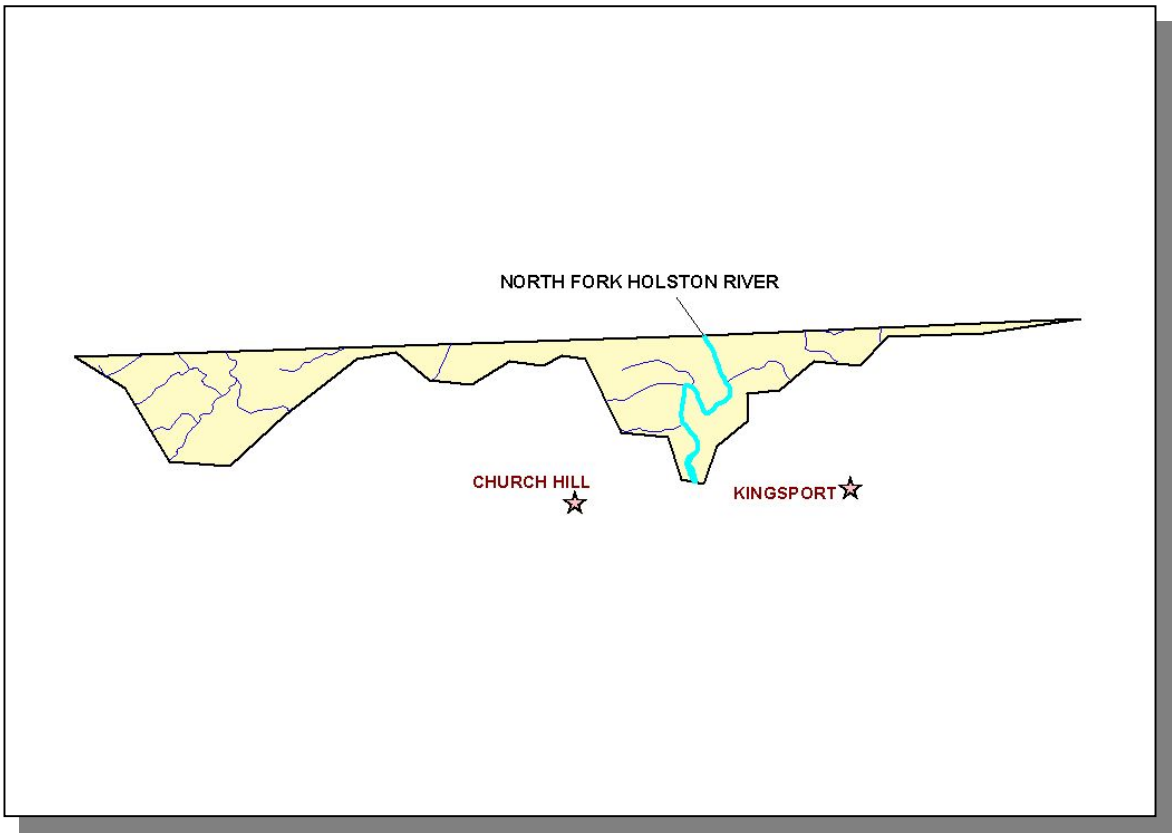

Figure 2-4. Hydrology in the Tennessee Portion of the North Fork Holston River Watershed. *There are 46 stream miles in the Tennessee portion of the North Fork Holston River Watershed as catalogued in the assessment database. An additional 1,110 stream miles are located in the Virginia portion of the watershed as catalogued in the River Reach File 3 database. Location of the North Fork Holston River and the cities of Church Hill and Kingsport (in adjacent watersheds) are shown for reference.*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

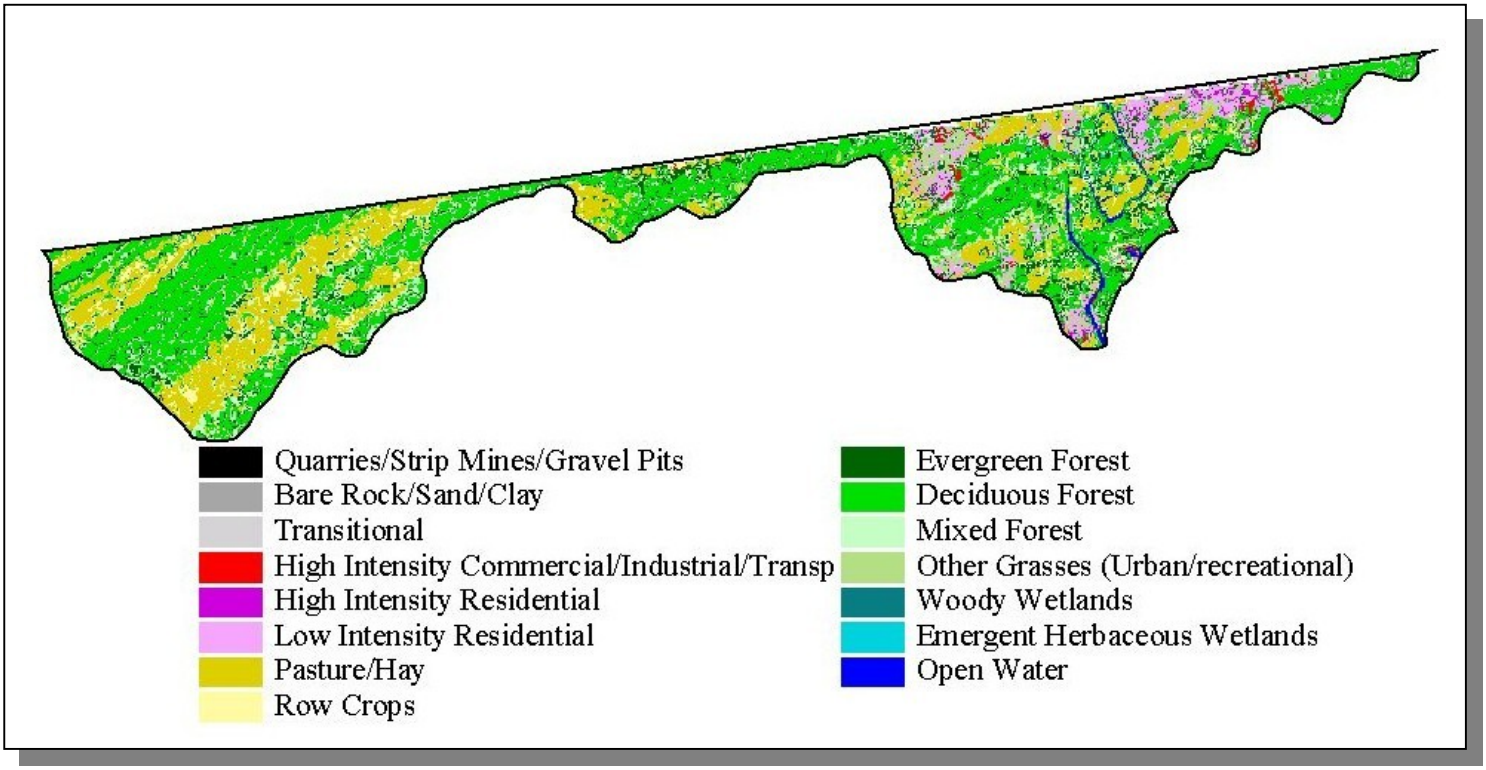

Figure 2-5. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery in the Tennessee Portion of the North Fork Holston River Watershed.

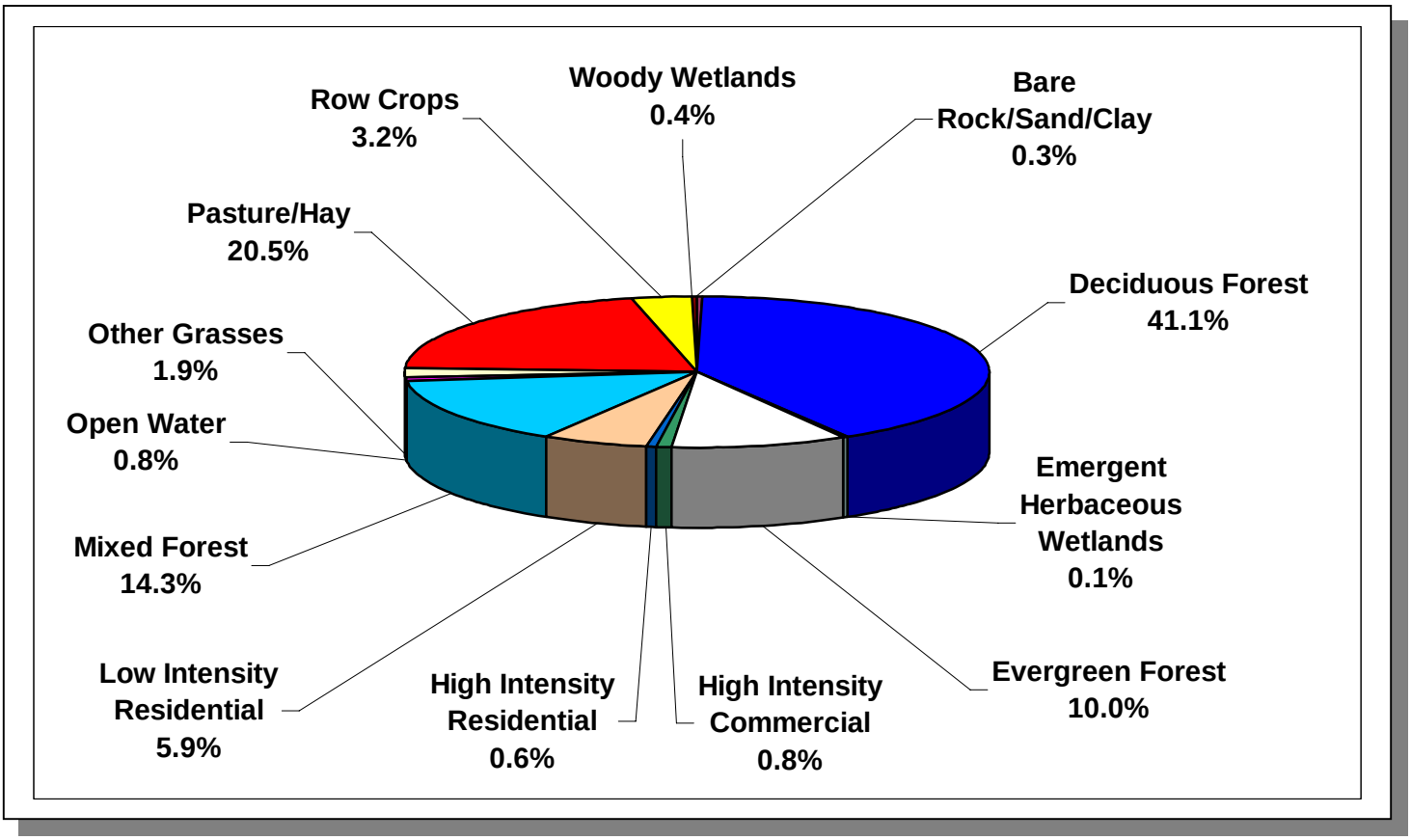

Figure 2-6. Land Use Distribution in the Tennessee Portion of the North Fork Holston River Watershed. *More information is provided in Appendix II.*

Sinkholes, springs, disappearing streams and caves characterize karst topography. The term "karst" describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term "karst" is named after a famous region in the former country of Yugoslavia.

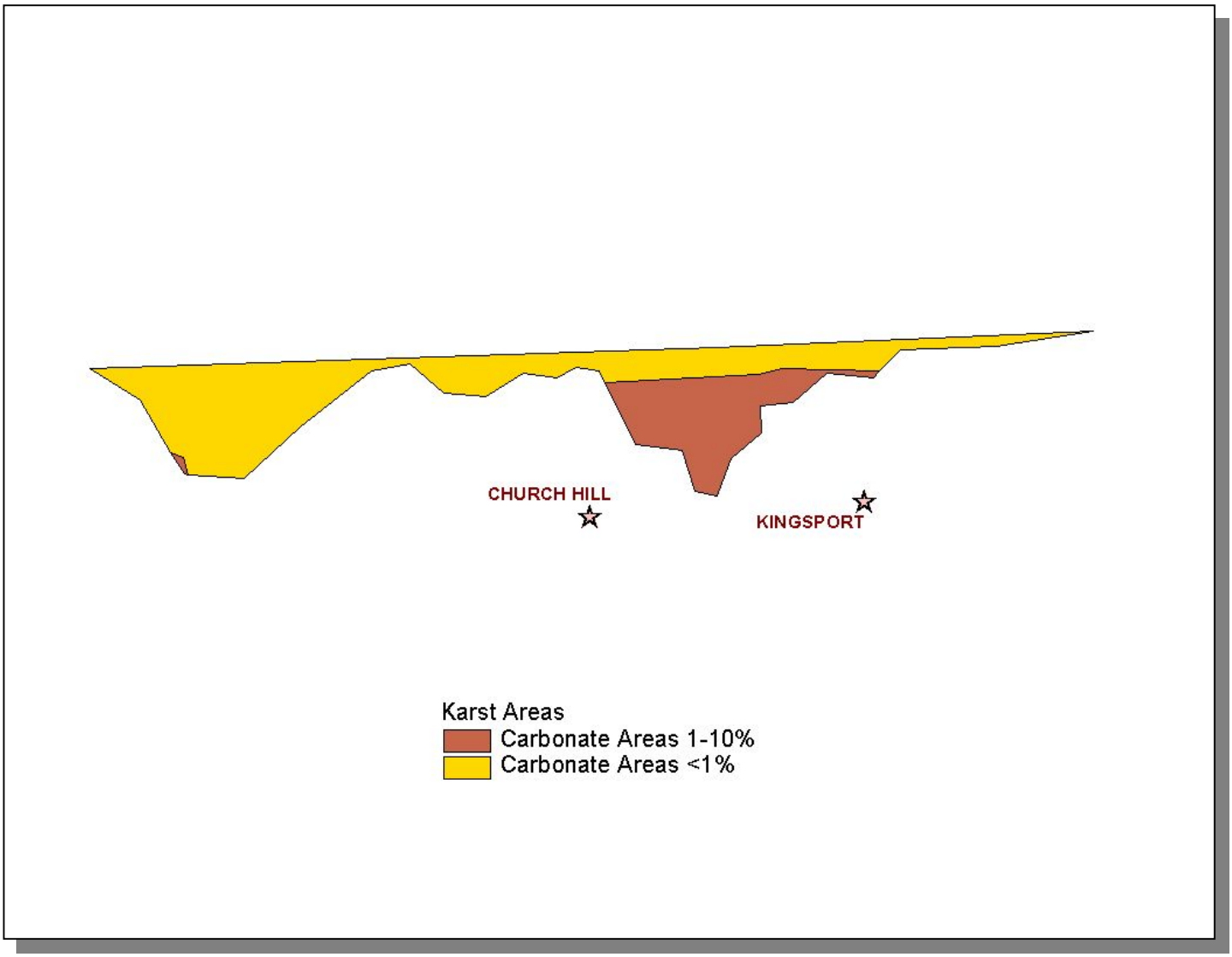

Figure 2-7. Illustration of Karst Areas in Tennessee Portion of North Fork Holston River Watershed. *Locations of Church Hill and Kingsport (in adjacent watersheds) are shown for reference.*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the North Fork Holston River Watershed lies within a single Level III ecoregions (Ridge and Valley) and contains 3 Level IV subecoregions:

- **Southern Limestone/Dolomite Valleys and Low Rolling Hills (67f)** form a heterogeneous region composed predominantly of limestone and cherty dolomite. Landforms are mostly low rolling ridges and valleys, and the soils vary in their productivity. Landcover includes intensive agriculture, urban and industrial uses, as well as areas of thick forest. White oak forest, bottomland oak forest, and sycamore-ash-elm riparian forests are the common forest types. Grassland barrens intermixed with cedar-pine glades also occur here.

- **Southern Sandstone Ridges (67h)** encompass the major sandstone ridges with areas of shale and siltstone. The steep, forested ridges have narrow crests with soils that are typically stony, sandy, and of low fertility. The chemistry of streams flowing down the ridges can vary greatly depending on the geological material. The higher elevation ridges are in the north, including Wallen Ridge and Powell, Clinch and Bays Mountains. White Oak Mountain in the south has some sandstone on the west side, with abundant shale and limestone. Grindstone Mountain, capped by the Gizzard Group sandstone, is the only remnant of Pennsylvanian-age strata in the ridge and valley of Tennessee.

- **Southern Dissected Ridges and Knobs (67i)** contain crenulated, broken, or hummocky ridges. The ridges on the east side of Tennessee's Ridge and Valley tend to be associated with the Ordovician Sevier shale, Athens shale, and Holston and Lenoir limestones. These can include calcareous shale, limestone, siltstone, sandstone, and conglomerate. In the central and western part the shale ridges are associated with the Cambrian-age Rome Formation: shale and siltstone with beds of sandstone. Chestnut oak forests and pine forests are typical for the higher elevations of the ridges, with white oak, mixed mesophytic forest, and tulip poplar on the lower slopes, knobs, and draws.

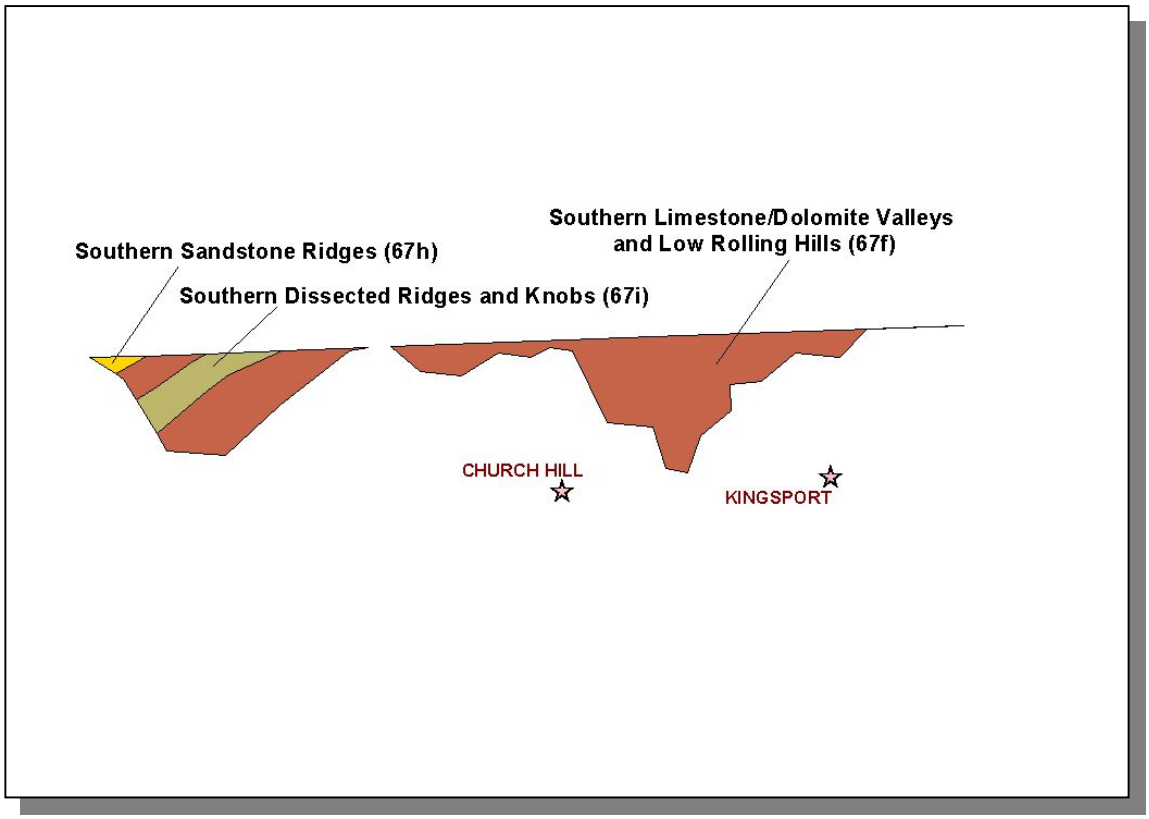

Figure 2-8. Level IV Ecoregions in the Tennessee Portion of the North Fork Holston River Watershed. *Locations of Church Hill and Kingsport (in adjacent watersheds) are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

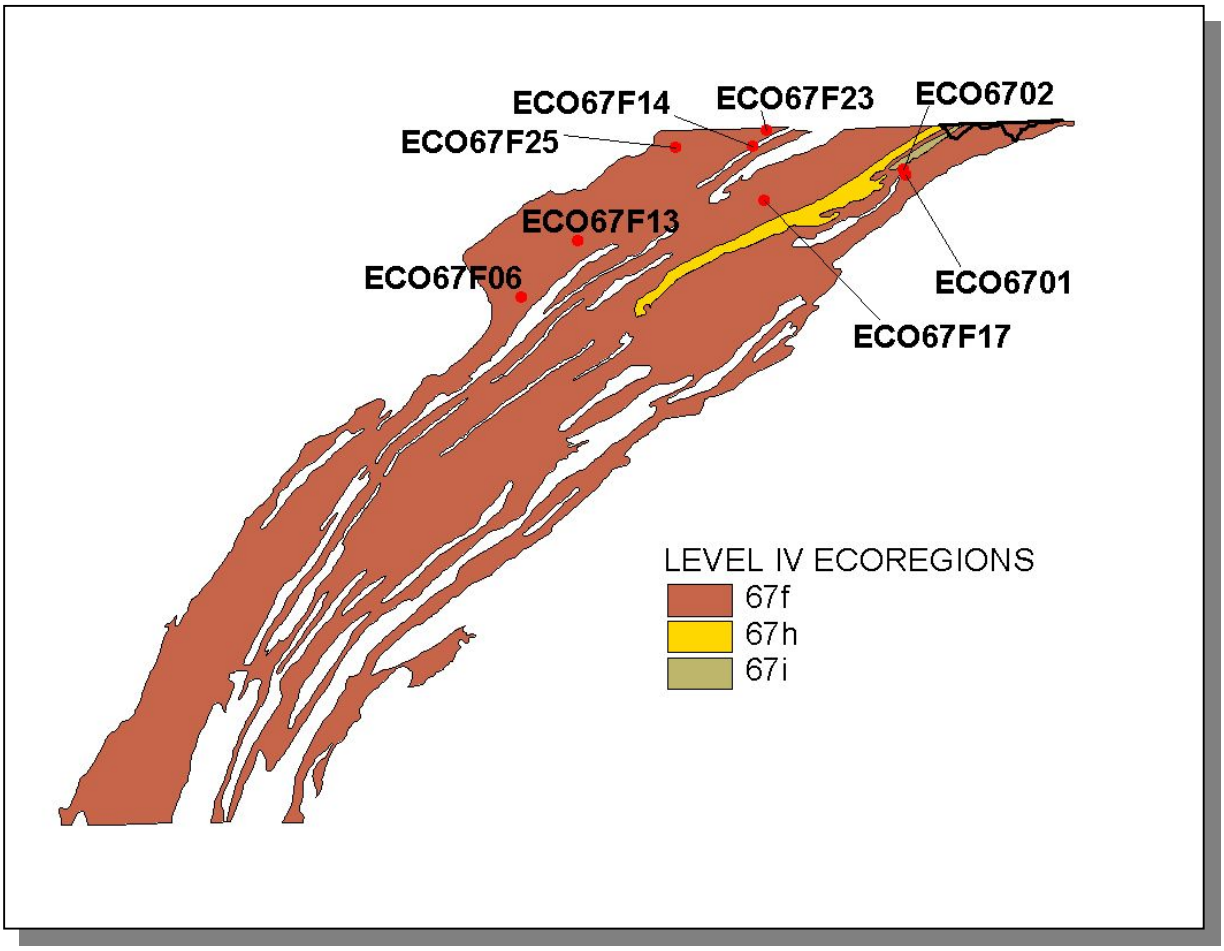

Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 67f, 67h, and 67i in Tennessee. *The Tennessee portion of the North Fork Holston River Watershed boundary is shown for reference. More information is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Mussels	4
Snails	1
Birds	1
Fish	3
Plants	1
Total	**10**

Table 2-2. There are 10 Known Rare Plant and Animal Species in the Tennessee Portion of the North Fork Holston River Watershed.

In the Tennessee Portion of the North Fork Holston River Watershed, there are 3 rare fish species, 5 rare mussel species, and 1 rare snail species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Cyprinella monacha	Spotfin Chub	LT	T
Percina aurantiaca	Tangerine Darter		D
Percina burtoni	Blotchside Darter	MC	D
Conradilla caelata	Birdwing Pearly Mussel	LE	E
Fusconaia cuneolus	Fine-Rayed Pigtoe	LE	E
Fusconia edgariana	Shiny Pigtoe	LE	E
Villosa perpurpurea	Purple Bean	LE	E
Io fluvialis	Spiny River Snail		

Table 2-3. Rare Aquatic Species in the Tennessee Portion of the North Fork Holston River Watershed. *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service; LT, Listed Threatened by the U.S. Fish and Wildlife Service; MC, Management Concern for U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; T, Listed Threatened by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/nh/data.php.*

2.7. Tennessee Rivers Assessment Project. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF
North Fork Holston River	2	2	2
Possum Creek	2		

Table 2-4. Stream Scoring from the Tennessee Rivers Assessment Project in the North Fork Holston River Watershed.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed